

Southern San Diego County, south into Baja California. Flowering period, March to July. Representative material. CALIFORNIA. San Diego County: Jamul, 1878, *Sanford* (SD); Monument, 1875, *Dunn* (SD); Otay Mountain, *Wolf 7982* (RSA), *Gander 1550* (POM, RSA, SD). "From a garden grown plant, seeds originally from Lower California (Ensenada)," (POM, isotype). BAJA CALIFORNIA: Johnson's Ranch (San Antonio), 1925, *Jones* (CAS, DS, NY, POM); San Antonio Canyon, 1925, *Ballou* (POM, UC); Cypress Canyon, San Antonio Mesa, 1936, *Epling & Stewart* (LA, DS, NY).

*Fremontia mexicana* is readily separated from other members of the genus: the rounded basal pits of the calyx lobes are devoid of hairs, the calyx is large and orange, the leaves are thick and heavy and conspicuously five-veined. Collections of *F. mexicana* have been reported from as far north as Sonoma County, but all such collections north of San Diego County that I have seen proved to be either *F. californica* var. *typica* or *F. crassifolia*. The manner of flowering of *F. mexicana* is quite different from that of the other species. Instead of a simultaneous mass of flowers, it produces fewer at one time but extends the blooms over a longer flowering period. According to Davidson (Bull. So. Calif. Acad. Sci. 16: 50. 1917), several other characters help to distinguish *F. mexicana* from the other species of *Fremontia*. The seeds are smaller and darker (this difference first caused Mr. Payne to show Dr. Davidson the seed which Miss Sessions had sent to him) and the manner of growth is at first characteristically different. "The seedlings shoot up straight as a miniature tree, while those of *F. californica* branch from near the base at an early stage."

Pomona College,  
Claremont, California,  
August, 1942.

## THE GENUS *STYRAX* IN CENTRAL AND WESTERN TEXAS

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Only one species of *Styrax* has been reported as occurring in central Texas whereas none was known from western Texas. The known species is *Styrax platanifolia* Engelm. which ranges from Kimble County east to Llano, Blanco and Travis counties. In this general area in 1940 I found two other well marked members of this genus which are to be differentiated, one as a variety of *S. platanifolia* and the other as a well marked species, types of which are at the Herbarium of the Arnold Arboretum. In making this study I was privileged also to examine material of another undescribed member of the genus that was taken in the Davis Mountains of southwestern Texas in 1914, and apparently

to date is the only collection ever taken of this plant. A contrast of certain characters of the three species concerned is exhibited herewith.

<i>S. platanifolia</i>	<i>S. texana</i>	<i>S. Youngae</i>
Upper leaf surface dull green, glabrous to bearing scattered stellate trichomes, reticulate-veiny.	Upper leaf surface bright green, glabrous, not reticulate-veiny.	Upper leaf surface dull green, densely and coarsely stellate-pubescent, not reticulate-veiny.
Lower and upper leaf surfaces similar.	Lower leaf surface markedly dissimilar to upper leaf surface, bright silvery with a very fine and dense indumentum only.	Lower leaf surface dissimilar to upper leaf surface, but not markedly so; grayish tomentose with a fine and dense indumentum beset with coarse stellate hairs.
Pedicel glabrous to nearly so.	Pedicel puberulent.	Pedicel densely, coarsely stellate-pubescent.
Calyx dark-brown, glabrous to finely puberulent; apex glandular and prominently toothed.	Calyx pale, densely puberulent; apex glandular and prominently toothed.	Calyx dark-brown, densely stellate-pubescent; apex non-glandular, the teeth inconspicuous.
Style pubescent half-way to apex.	Style pubescent only at base.	Style pubescent nearly to apex.

In the description of *S. platanifolia* it is stated that the foliage is glabrous or nearly so and that even the pedicels and calyx are glabrous or nearly so. This characterization is accurate for the plant as it occurs in the northern and eastern portions of its range, but elsewhere the plant is entirely that form described herewith as variety *stellata*.

*STYRAX PLATANIFOLIA* Engelm. var. *stellata* var. nov. A specie differt foliis indutis trichomatibus stellatis grossis latissimae dispersis, calyce indumento denso minuto obtecto.

*Styrax platanifolia* var. *stellata* differs from the species in that the leaves bear scattered coarse stellate trichomes and in that the calyx is covered with a dense fine indumentum.

Type. Sabinal Canyon, about six and one-half miles north of Vanderpool, Bandera County, Texas, June 16, 1940, *Cory 34765*.

Representative collections. Kendall County: Spanish Pass, July 5, 1911, *Clemens & Clemens*; *E. J. Palmer 9843, 11474*. Bandera County: Upper Seco Creek, *E. J. Palmer 10237*. Blanco County: Twin Sisters, June 2, 1940, *Mrs. Kush*.

*Styrax platanifolia* and its variety *stellata* occur in the Edwards Plateau area of Texas, the species centering about southern Llano County and the variety some 50 miles south and southwest in Bandera and Kendall counties. They are not known to occur together or the one to occur in the distributional area of the other.

The upper or western edge of the Coastal Plain lies at an elevation of about 600 feet and the Escarpment of the Edwards Plateau to the west rises to an average elevation of 2200 feet. At its western side (Marathon Basin) the edge of the Edwards Plateau has an elevation of 4000 feet. The various drainage courses make the descent from the Plateau to the Coastal Plains through canyons. The vegetation of these canyons is similar to that of the Escarpment and is unlike that of the Coastal Plains or of the summit of the Plateau. The genus *Styrax* in this area occurs only on the Escarpment and in the canyons. In July, 1940, a new species of *Styrax* was found further west in one of these canyons, and it is described herewith.

*Styrax texana* sp. nov. Frutex vel arbuscula patens, 1.5–3 m. altus, calciphilus in praeruptis; foliis deciduis, aequae longis ac latis, ad 6.5 mm. latis, integris, apice basique abrupte acutatis, basi caeterum truncata vel rotundata, tenuibus, supra laete viridibus levibus, subtus indumenti causa minute denseque serecei argentatis; floribus post medium Aprilem in anthesi, pedicellatis pedunculatisque, saepius 3–5 glomeratis, pedunculis pedicellis aequantibus vel interdum longioribus, promore recurvatis, subglabratis vel puberulis; calyce pallido, corolla concolori, dense puberulo, campanulato, ca. 5 mm. longo, 4 mm. lato, truncato, margine glandulari 6–7-dentato, dentibus ca. 1 mm. longis, anguste triangularibus, glandulosis; petalis 5, puberulis, anguste ellipticis, obtusis, ad 2 cm. longis; fructu sicco, globoso, ca. 8 mm. diametro, pedicellato, valvis 3, serius dehiscentibus, 1- vel 2-loculato, semine in loculo quove unico; pedicello sub fructu saepissime recurvato, bene subulato; stylo basi crasso, 15–18 mm. longo, basi ad 2 mm. vel ultra canescente, caeterum glabro, gracili, apice curvo vel recurvato.

Spreading, graceful shrub, 1.5–3 m. high, usually growing in inaccessible places on steep limestone cliffs; leaves about as broad as long, up to 6.5 cm. broad, petioled, entire, abruptly acute at apex and base, the base otherwise truncate or rounded, thin, bright green and smooth above, silvery with a very fine and dense silky indumentum below; flowers appearing the last half of April, pedicellate and pedunculate, usually in clusters of 3 to 5, the pedicel puberulent, as much as 1 cm. long, the peduncle about as long as the pedicel or sometimes longer, frequently recurved, subglabrate to puberulent; calyx pale, similar in color to the corolla, densely puberulent, campanulate, about 5 mm. long, 4 mm. broad, truncate, the apex glandular, 6- to 7-toothed, the teeth about 1 mm. long, narrowly triangular and glandular-tipped; petals 5, puberulent, narrowly elliptic, obtuse, up to 2 cm. long; fruit dry, globose, about 8 mm. in diameter, pedicellate, 3-valved, tardily dehiscent, 1- or 2-celled, each cell 1-seeded; pedicel in fruit frequently recurved, tapering throughout; style stout at base, 15–18

mm. long, canescent for 2 mm. or more at the base, glabrous, slender, and curving or recurved above.

The foliage of *S. platanifolia* is of relatively larger leaves of a coarser texture and dull green throughout, undulate or angulate-toothed or even sinuate-lobed, and prominently reticulate-veiny, whereas the foliage of *S. texana* is of rather smaller entire or subentire leaves of a finer texture and with the two leaf-surfaces being markedly dissimilar in that the upper surface is smooth and very bright green and the lower surface is bright silvery with a very dense fine and silky covering, and neither surface is reticulate-veiny. Moreover in *S. texana* the calyx is densely puberulent while in *S. platanifolia* the calyx is glabrous or nearly so. The former species occurs to the west of the latter and at an elevation of several hundred feet greater.

Type. Altitude 1975 feet, west side of Polecat Creek, about one-half mile above its junction with Pulliam Creek (which joins the Nueces River at about eleven airline miles southeast), Edwards County, Texas, July 4, 1941, *Cory 34940*.

This type locality is nine and one-half miles south and five miles east of Rocksprings and, on an airline, is about forty-five miles directly west of the Sabinal Canyon locality of *S. platanifolia* var. *stellata*. The only other known locality is in the same county and is about seven miles southwest by airline. Here, on the north side of Cedar Creek Canyon, a tributary of Pulliam Creek, one shrub is growing on a very narrow shelf on a steep limestone cliff.

The discovery plant of *Styrax texana* was found along Pulliam and Polecat creeks on July 4, 1940. The single shrub seen was so unlike the variety of *S. platanifolia* which I had seen in Sabinal Canyon that I became strongly interested in it. In the following year in the same region in Polecat Canyon, additional shrubs of this plant were found higher up on the cliffs. Later, a single shrub of the plant was found along Cedar Creek. In 1942 special efforts were made to see this plant in bloom. On April 5 the sixty-five mile trip to the Cedar Creek site was made; it was found that the foliage of the plant was immature and the inflorescence was only in bud. On April 18 a visit was made to the discovery plant in Polecat Canyon where our efforts were fully rewarded. In our opinion *S. texana* should prove to be a highly desirable ornamental plant for growth in the limestone areas of Texas.

*Styrax Youngae* sp. nov. Frutex 2.5-3 m. altus; foliis minoribus orbicularibus, majoribus ellipticis, ad 5 cm. longis, 3.5 cm. latis, subintegris, apice basique plus minusve rotundatis vel apice paulo acutatis, tenuibus, supra viridibus at pilis grossis stellatis dense indutis, subtus tomentosus neque argenteis, indumento minuto denso pilis, stellatis grossis consperso, nervis colore stramineo prominentibus, brevipetiolatis; floribus medio Aprili mense in anthesi, 3-7 aggregatis racemosis, pedunculis valido, 4-20 mm.



longo, grosse stellato-pubescente, pedicello valido, 4-8 mm. longo, dense grosseque stellato-pubescente; calyce campanulato, ca. 4 mm. longo latoque, nigro-brunneo, dense stellato-pubescente, apice truncato, eglanduloso, dentibus inconspicuis; petalis 5, 15-17 mm. longis, anguste ellipticis obtusis, dense stellato-puberulis; fructu ignoto; stylo valido, 16-17 mm. longo, fere ad apicem stellato-pubescente.

Plant a shrub, 2.5-3 m. high; smaller leaves orbicular, larger leaves elliptical, up to 5 cm. long and 3.5 cm. broad, subentire, more or less rounded at the apices and bases or somewhat acute at the apices, thin, green above but densely pubescent with coarse stellate hairs, tomentose below, but not silvery, with a very fine and dense indumentum which is beset with coarse stellate hairs, veins prominent and straw-colored, short-petioled; flowers appearing the middle of April, in racemose clusters of 3-7, peduncles stout, 4-20 mm. long, coarsely stellate-pubescent, pedicels stout, 4-8 mm. long, densely and coarsely stellate pubescent; calyx campanulate, about 4 mm. long and 4 mm. broad, dark-brown, densely stellate-pubescent, apex truncate, non-glandular, the teeth inconspicuous; petals 5, 15-17 mm. long, narrowly elliptic, obtuse, densely stellate-puberulent; fruit not seen; style stout, 16-17 mm. long, stellate-pubescent to near the apex.

Type. Canyon, Davis Mountains, Texas, May 12, 1914, Dr. Mary S. Young (Herbarium of the University of Texas).

This is the only collection of *Styrax* from the mountains of southwestern Texas. The exact type locality is unknown, but likely it was some minor canyon for the larger ones are named and were well known even more than thirty years ago. The description is based upon the type specimen and the species is named in honor of its discoverer.

Both *S. platanifolia* and *S. texana* grow on highly calcareous soil, whereas *S. Youngae* grows in soil of igneous origin and in which free limestone is absent. *S. texana* grows at elevations just below 2,000 feet and *S. platanifolia* grows at elevations of a few hundred feet lower, whereas *S. Youngae* grows at elevations in excess of 4,000 feet. In between the elevations of 2,000 and 4,000 feet in Texas there are no plants whatsoever of *Styrax*. It seems probable that *S. Youngae* is a species of northern Mexico, for at that point in far western Texas there are mountains on both sides of the Rio Grande. Inasmuch as the plant has not been found in the twenty-nine years intervening since its original collection this species must be rare and at its northern limit in the Davis Mountains of southwestern Texas. On the other hand neither *S. platanifolia* nor *S. texana* is likely to be found in northern Mexico, for both species are so far unknown from that portion of the Edwards Plateau which extends along the Rio Grande.

It is known that *Styrax* has disappeared from localities where once it was not uncommon, and it seems to be true that at the

present time it grows mostly in places inaccessible to the Angora goat, or in places where this animal is not grazed. The circumstantial evidence is that the foliage of *Styrax* is palatable as browse to these hardy animals that produce our mohair.

It has not been my pleasure or privilege to meet the late Dr. Mary S. Young, but I do wish to accord my recognition of the accomplishments of this pioneer botanist in her explorations of the flora of the mountains of southwestern Texas by naming the *Styrax* of her collection in her honor. I trust that this may offset my part in pointing out that *Talinum Youngae* C. H. Muller, also a plant of the Davis Mountains, is synonymous with *T. pulchellum* Woot. & Standl.

I wish to acknowledge my good fortune in having had valuable assistance given me by Dr. I. M. Johnston in his study of my material, in criticism of my provisional manuscript, and in the loan of the *Styrax* material from the Herbarium of the Arnold Arboretum, by Dr. B. C. Tharp for criticism of the original manuscript and for the loan of the *Styrax* material from the Herbarium of the University of Texas, and by Dr. P. A. Munz for study of my material, for the loan of *Styrax* material from the Herbarium of Pomona College, and for the loan of the volume of "Das Pflanzenreich" which contains the treatment of Styracaceae. I am deeply grateful to these gentlemen. Furthermore, I wish to express grateful appreciation to Dr. Leon Croizat for valuable assistance given me in the preparation of the Latin descriptions in this manuscript.

Texas Agricultural Experiment Station,  
Sonora, Texas,  
May 9, 1943.

## THE STORY OF PARTHENIUM ALPINUM

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In the spring of 1834, Thomas Nuttall and John K. Townsend left St. Louis with the Wyeth Expedition, bound for Fort Vancouver, Oregon. One of the plants collected on the expedition was *Parthenium alpinum* (Nutt.) T. & G., first described by Nuttall (9) as *Bolophyta alpina*. This curious little plant, which, except for the heads, resembles a caespitose *Actinea*, has not been recollected along Nuttall's route, and the type locality has not been determined definitely. The data given by Nuttall are indefinite and confusing, and subsequent literature is of little help.

A comparison of Nuttall's description with Townsend's journal will reveal the difficulty. Here are Nuttall's words (p. 348): "Hab. In the Rocky Mountain range; latitude about 42° and seven thousand feet above the level of the sea. On shelving rocks, on the summit of a lofty hill, near the place called the